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STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
DIVISION OF AIR AND WASTE MANAGEMENT
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NEW CASTLE, DELAWARE 19720-4801

WASTE MANAGEMENT SECTION
SUPERFUND BRANCH

TELEPHONE: (302) 323-4540
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November 16, 1994

Ms. Debra Rossi
Remedial Project Manager
U.S. EPA, Region III
841 Chestnut Street
Philadelphia, PA 19107

RE: Air Sparging Pilot Test, Scope of Work

Dear Ms. Rossi:

The Department of Natural Resources and Environmental Control (DNREC) has reviewed the above referenced report and offers the attached comments. If you have any questions please contact either myself or M. Margie Zhang at (302) 323-4540.

Sincerely,

David Langseder

David Langseder
Project Officer

DL:94045:dmg
DE-042 II C2

cc: Stephen N. Williams, Program Manager I

State of Delaware
Department of Natural Resources and Environmental Control
Division of Air and Waste Management
SUPERFUND BRANCH
715 Grantham Lane
New Castle, Delaware 19720

MEMORANDUM

TO: Dave Langseder DATE: November 15, 1994

THRU: Stephen N. Williams 11/15

FROM: M. Margie Zhang

SUBJECT: Air Sparging Pilot Test Scope of Work
NCR Site, DE

Per your request, the above referenced reports have been reviewed. The following comments and suggestions are offered for your consideration:

1. I am afraid that the "air compressor capable of approximately 5 psi" (on page 6, Section 4.2, the third paragraph) is not sufficient. Please note that in order to initiate air movement into the water saturated medium, the air pressure must be greater than a certain amount of pressure, the sum of the water pressure and the capillary pressure. The capillary pressure depends on the properties of the medium, while the water pressure depends on the depth of the sparging points. When "the air sparge well will be installed to an approximate depth of 38 feet" (page 6), that is, the sparging points will be 15 feet below water table, the water pressure at the sparging points will be 6.5 psi (0.4335 psi/ft times 15 feet). Obviously, the proposed compressor pressure of 5 psi is not greater enough to allow the air entering the porous medium and migrating.

2. As I mentioned on the meeting of September 28, 1994 at EPA office, the effects of metals on the groundwater should be evaluated:

   A) Chromium is the second predominant contaminant on this site. When air injected into the subsurface, Cr III may be converted to highly mobile and toxic Cr VI. Is there any significant impact on the groundwater?

   B) The native groundwater in Delaware consists of high concentration of iron. Under oxidizing conditions, ferrous form of iron (Fe II) will convert to ferric form (Fe III), which is less soluble, less mobile and will tend to

precipitate out. Would the precipitation affect the effectiveness of the AS/AVE system? and how significant it will be?

3. Horizontal wells haven't been considered in this study. It is my suggestion that during the pilot study, horizontal SVE wells also be estimated versus the vertical SVE wells to select the most cost effective approach.

If you have any questions or if there is anything you want to discuss further, please feel free to stop by my office.

MMZ:dmg
MMZ94023
DE-042 II D1

pc: N. V. Raman